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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/903,610	07/13/2001	Toshimori Miyakoshi	1272.C0465	2208

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EXAMINER

NGUYEN, LAM S

ART UNIT PAPER NUMBER

2853

DATE MAILED: 05/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/903,610

Applicant(s)

MIYAKOSHI, TOSHIMORI

Examiner

LAM S NGUYEN

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-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsubara (US 5576745) in view of Ohsima et al. (EP 0569201 A).

Matsubara discloses a method for controlling the drive energy of an ink jet print apparatus wherein a print element is driven to eject an ink from an ink jet print head to a printing medium for performing printing, the method comprising:

a first step for supplying a plurality of different drive energies successively to the ink jet print head (column 17, line 43-44: heating the recording heat by supplying a plurality of different drive energies successively indicated by a sequence of two pulses (FIG. 15);

a second step for monitoring temperature of the ink jet print head (column 17, line 45-47) in each supply of the plurality of different drive energies (column 17, line 64-67: the temperature is detected at before and after the preheat pulse is applied; by another words, the temperature is detected at before and after the main pulse is applied);

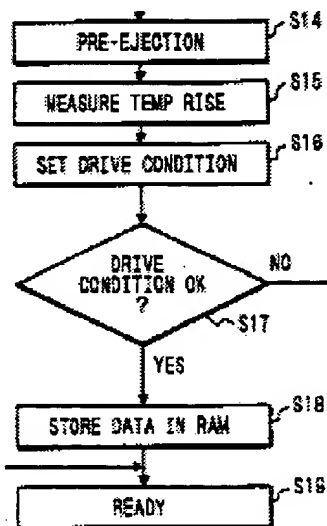
a third step for judging a threshold drive energy (in term of "a thermal change state") required for ink ejection of the ink jet print head using a value for each supplied drive energy and a value for each monitored temperature (column 17, line 48-50: teaching a determination of the thermal characteristic that is a thermal change state of the thermal head by

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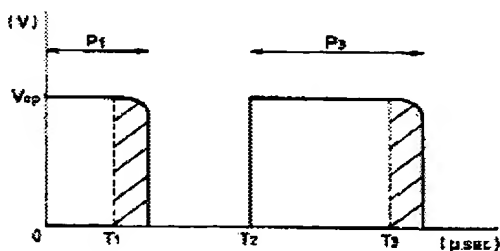
energizing the thermal head (column 3, line 26-27) based on the temperature change caused by a supplied drive energy);

a fourth step for determining a drive condition for ejecting ink on the basis of the threshold drive energy (column 17, line 52-54: a threshold drive energy is implied in the term "a thermal characteristic" as explained above); and

a fifth step for driving the print element on the basis of the determined drive condition (column 17, line 56-57).



Referring to claims 2, 8: wherein in said first step, a difference in the amount of each drive energy supplied to the ink jet print head is generated by changing a pulse width of a drive pulse signal applied to the print element (FIG. 15: the pulse widths of P1 and P3 are modulated).



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Referring to claims 3, 9: wherein in said first step, an initial drive energy supplied is determined on the basis of drive condition information (in term of "a standard drive condition") stored in the ink jet print head (column 1, line 59-67).

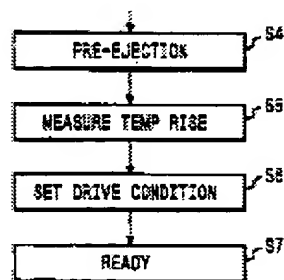
Referring to claims 6, 12: a method for controlling the drive energy of an ink jet print apparatus wherein a print element is driven to eject an ink from an ink jet print head to a printing medium for performing printing, the method comprising:

a first step for supplying a plurality of different drive energies successively to the ink jet print head (FIG. 10, step S4 and FIG. 15);

a second step for monitoring temperature of each of said ink jet print head (FIG. 10, step S5) in each supply of the plurality of different drive energies (column 17, line 64-67: the temperature is detected at before and after the preheat pulse is applied; by another words, the temperature is detected at before and after the main pulse is applied);

a third step for determining a drive condition for ejecting ink using a value for each supplied drive energy and a value for each monitored temperature (FIG. 10, step S6); and

a fourth step for driving the print element on the basis of the determined drive condition (FIG. 10, step S7: READY means ready to record (column 10, line 58)).



Referring to claim 14: wherein the memory provided on the ink jet print head is an EEPROM (column 11, line 35-44).

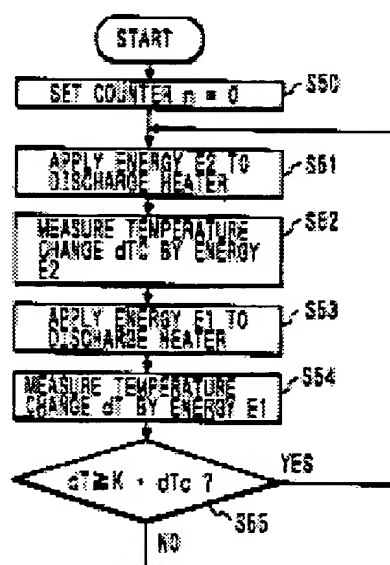
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Referring to claims 4, 5, 10, 11: wherein in said fifth step, when the determined drive condition is different from drive condition information stored in said ink jet print head, drive condition information stored in the ink jet print head is updated with the determined drive condition data or when both are different, drive energy to drive the print element is changed (FIG. 11, steps S17 and S18), then based on new data stored in RAM, new pulse width modulation is done).

Referring to claims 15, 16: wherein energy supply to the ink jet print head is made by applying drive signals (FIG. 12, 15) to heat generation elements (FIG. 2, element 5113) of the ink jet print head.

Matsubara does not disclose the temperature, in the step for monitoring temperature of the ink jet print head, reflecting a temperature change caused by each supplied drive energy.

FIG. 23



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However, Ohshima et al. disclose a process of measuring temperature in an inkjet printhead wherein temperature detected reflecting a temperature change caused by each supplied drive energy (FIG. 23: the temperature is measured (S52 and S54) right after the drive energy E2 (S51) or drive energy E1 (S54) is applied) for improving the accuracy of the detected temperature.

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to modify the step for monitoring temperature of the ink jet print head disclosed by Matsubara such that the detected temperature reflecting a temperature change caused by each supplied drive energy as disclosed by Ohshima et al. The motivation of doing so is to improve the accuracy of the detected temperature during the ejection of the printhead as taught by Ohshima et al. (column 22, line 37-52).

Response to Arguments

Applicant's arguments with respect to claims 1, 6-7, and 12-13 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAM S NGUYEN whose telephone number is (703)305-3342. The examiner can normally be reached on 7:00AM - 3:30PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, RUSS ADAMS can be reached on (703)308-2847. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-3431 for regular communications and (703)305-3432 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

LN

May 7, 2003


JUDY NGUYEN
PRIMARY EXAMINER